

## DG-505 TRAILER PROCEDURE (N505KM)

June 19,2009

### ASSEMBLY

Read each section from start to finish before you commence procedures in that section.

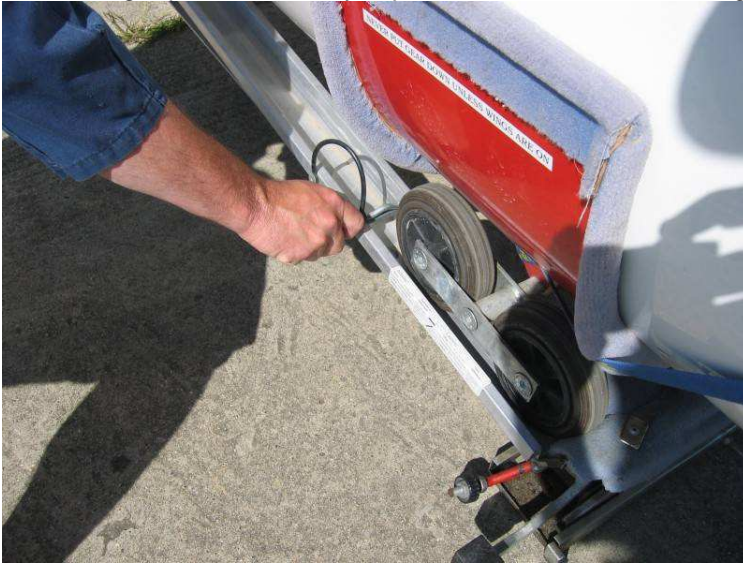
The process works best with 3 or 4 people -- with more than that, mistakes become more likely. Designate one person in charge with checklist.

#### **A) Setup and Fuselage**

1. Position trailer, nose into any wind if possible. Chock wheels. Set parking brake (lever next to trailer hitch).
2. Open trailer, unlock and lower tailgate. Set rear trailer jacks and front crank-up wheel so that trailer floor slopes down with open trailer tailgate just clearing the ground. Do not use significant force on trailer jacks -- end of jack screw is held in place with just a split pin and a washer.
3. Place red felt protection pads over rear trailer corners.
4. Have ready paper towels or rags, grease and wing tape.
5. Have one or two wing stands available.
6. Pull out fuselage dolly ramp and set jack on ground. Pins at front end of ramp fit into slots in rear of trailer floor. Unlatch middle rail of ramp and swing into position in center of ramp. Pull out additional ramp extension for tailwheel channel (stored on left rear floor of trailer), and place on end of fuselage ramp. Remove locking clip from side rail of ramp so it doesn't block wheel of fuselage dolly.
7. Pump up hydraulic ramp jack. Note how jack is controlled for raising and lowering -- be careful not to bump the control knob once fuselage has been pulled out onto ramp, as jack may then lower itself when you don't want it to.
8. Unstrap tail boom from trailer floor. Roll out fuselage until dolly is at end of ramp.



9. Use locking clip to secure dolly in place so it won't roll forward again.



10. NEVER PUT WHEEL DOWN BEFORE WINGS ARE ON THE GLIDER. If wheel is down and jack accidentally lowers before wings are installed, fuselage may roll to side, hit ground and cause major damage.
11. Check cockpit contents.

## **B) Wings**

1. Remove tie-down strap that runs through wing-spar holes in fuselage, and coil up under glider where you won't trip on it.
2. Check to see that fuselage is level (vertical stabilizer exactly vertical).
3. Push spoiler control handle full forward.
4. Place wing stand near where right wingtip will be when glider is assembled.
5. Make sure aileron locks are in place on both wings
6. Locate 2 main spar pins, 2 small locking pins and threaded tool for inserting locking pins.
7. Clean main pin holes in wing spars and clean fuselage connecting pin holes in wing roots. Clean and grease connecting pins that protrude from fuselage.



8. Clean and grease main spar pins and set on paper towel or rag in cockpit. Clean and grease small locking pins. Thread one of the small locking pins onto the threaded tool, but don't screw it on tight -- back it off a little to leave a gap between tool body and end of locking pin.



9. Close both canopies. Make sure there are no objects to trip over in path of wings.
10. Install right wing first.
11. One person lifts outboard end of wing, walks wing back out of trailer until wing root dolly reaches rear end of trailer. Be careful not to contact pins protruding from side of fuselage. Other person lifts wing spar off wing root dolly. Support wing spar on your thigh.



Walk wing around to line up with fuselage, rotate wing horizontal, then insert spar into fuselage. Third person should be at trailing edge of wing root with small locking pin on threaded tool.

12. Insert wing fully into fuselage. Make sure mounting pins on outside of fuselage go into holes in wing root, and make sure control connections line up.



13. Insert small locking pin into hole in top surface of wing near trailing edge of wing root.



Locking pin should go down into hole in larger mounting pin that protrudes from side of fuselage. Person on wingtip may need to lift wingtip and/or move forward or aft. Spring-loaded wedge inside wing should snap into place at top edge of locking pin. Unscrew threaded tool to remove tool -- locking pin stays in place.

14. Place wing stand under right wing tip. Note -- there are no tip-wheels on inner wing panels, so ends must not be allowed to touch the ground prior to installing wingtips.
15. Repeat steps 9 through 11 for left wing. Make sure both wingtips are fully supported at all times until main spar pins have been inserted -- if wingtips are allowed to drop while wings are being inserted, damage to fuselage may occur.
16. Open rear canopy.
17. Have assistants lift on wing tips as needed to align spar pin holes. Insert main spar pins, then turn handles upwards. Turn wire handle on front of each spar pin to screw in place the locking collar that protrudes from rear of each main spar pin, then secure wire handle on retaining clip.



18. Repeat step 13 for left wing.

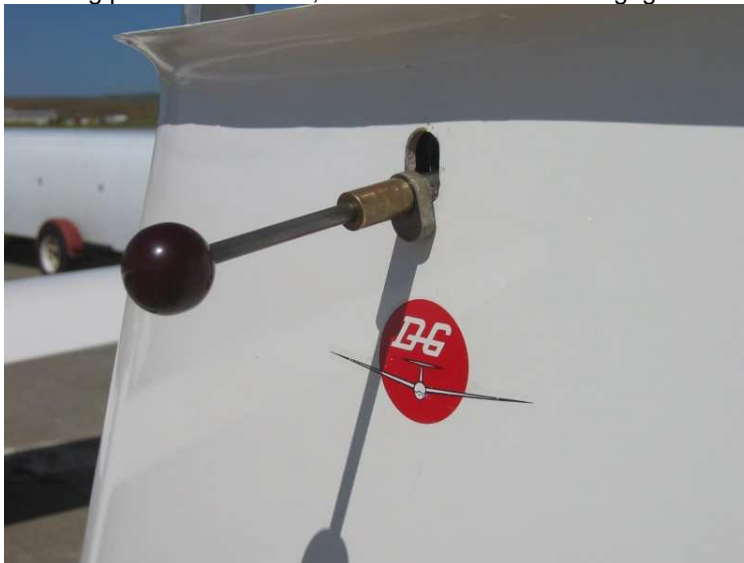
19. Install wingtips. Press down the locking pin as you slide the tip-spar into the hole in the end of main wing panel. Line up the mounting pins for the wingtip and the connector tabs for the aileron, and insert the wingtip all the way. Strike firmly with the palm of your hand onto the wing tip (at base of winglet) to lock in the wing tip, so that locking pin pops up flush with top wing surface. DO NOT USE WINGLET AS A LEVER FOR PUSHING IN THE WINGTIP.

### C) Horizontal Stabilizer

1. Clean and grease mounting pins on brackets that protrude from top of vertical stabilizer.



2. Rigging of the horizontal stabilizer is only permitted with nose-down trim-setting. Therefore operate the trim release lever and push the control stick forward, then release the lever to engage the trim (don't operate the trim control knob, the trim should not be pushed to the most nose down position).
3. Check that tail battery is installed, electrical connection is hooked up, and fuse is not blown (check that instruments will run off tail battery).
4. Insert threaded tool into the securing plate (near the top of the left surface of the fin). Pull out the securing plate with the tool, move it downwards to engage in the rigging position.



5. Remove horizontal stabilizer from trailer. Carry with one person at each end.

6. Lower stabilizer onto vertical fin. Make sure the roller on the end of the elevator control rod goes into slot in "funnel" attached to elevator.. When stabilizer is lowered fully, push it aft until red line on left underside of stabilizer lines up with red line on fin.
7. Use the tool to pull the securing plate up and then let it snap into place, to lock horizontal stabilizer in place. The securing plate must be flush with the surface of the fin. Unthread tool to remove.
8. **Check for correct elevator connection by looking from the rear into the gap at the right hand side of the rudder. Elevator control rod must be fully engaged into track in "funnel" attached to elevator.**
9. Install total energy probe.

#### **D) Preparation for Flight**

1. Remove tailwheel ramp extension from fuselage dolly ramp, and store in left rear corner of trailer (note bracket to hold end of ramp in place).
2. Extend landing gear.
3. Lower hydraulic ramp jack, then roll glider back off of fuselage dolly.
4. Install luggage-shelf battery. Check batteries, radio and other instruments.
5. Clean old tape residue off joints. Manufacturer recommends use of white gas (Coleman fuel) as the best cleaning fluid.
6. Tape wings and horizontal stabilizer. Tape TE probe connection.

#### **E) Prepare Trailer for Retrieve**

1. Secure fuselage dolly and wing root dollies at front of trailer.
2. Close horizontal stabilizer cradle.
3. Remove tailwheel ramp extension from end of fuselage dolly ramp, and store inside left rear of trailer (note how front end fits under bracket). Unlatch middle rail of ramp and swing out to side of ramp. Lower hydraulic jack. Lift dolly ramp and slide into trailer.
4. Remove trailer corner protectors and stow inside trailer.
5. Close and latch tailgate.
6. Close and latch rear of trailer.
7. Store jack handle in front of trailer.
8. Gather up all loose odds and ends into spares box. Put battery charger in appropriate location.

#### **F) Trailer Towing**

1. Make sure trailer jacks are retracted all the way before moving trailer.
2. After attaching trailer to tow vehicle, completely remove wind-up wheel at front of trailer, and store in tow vehicle. If left installed on trailer, these wind-up wheels have a tendency to vibrate loose and scrape on road.

## **DG-505 TRAILER PROCEDURE (N505KM)**

### **DISASSEMBLY**

Read each section from start to finish before you commence procedures in that section.

The process works best with 3 or 4 people -- with more than that, mistakes become more likely. Designate one person in charge with checklist.

#### **A) Setup**

1. Position trailer, nose into any wind if possible. Chock wheels. Set parking brake (lever next to trailer hitch).
2. Open trailer, unlock and lower tailgate. Set rear trailer jacks and front crank-up wheel so that trailer floor slopes down with open trailer tailgate just clearing the ground. Do not use significant force on trailer jacks -- end of jack screw is held in place with just a split pin and a washer.
3. Place red felt protection pads over rear trailer corners.
4. Have ready paper towels or rags.
5. Have one or two wing stands available.
6. Locate the following tools: Tool used for removing wing tips (same as tool used for removing tail ballast cover on DG-1000). Similar-sized tool with threaded end is used for removing horizontal stabilizer and wing root locating pins. Both those tools should be in the spar pin / tool pouch in cockpit.
7. Pull out fuselage dolly ramp and set jack on ground. Pins at front end of ramp fit into slots in rear of trailer floor. Unlatch middle rail of ramp and swing into position in center of ramp. Remove locking clip from side rail of ramp so it doesn't block wheel of fuselage dolly. Pull out fuselage dolly to end of ramp. Use locking clip to secure dolly in place so it won't roll forward again.
8. Pull out wing-spar dollies to back end of trailer. Make sure there are no storage boxes or other objects at front of trailer that will block wing spars when spar dollies are rolled back in with wing.
9. Open horizontal stabilizer cradle in roof of trailer.
10. Make sure pads are clean on trailer floor where wing leading edges rest.
11. Note how jack is controlled for raising and lowering -- be careful not to bump the control knob once the glider is on the dolly, as jack may then lower itself when you don't want it to.
12. Remove tail dolly from glider.
13. Position glider nose over fuselage dolly -- rear edge of dolly should be near back end of rear canopy.
14. Place wing stand under right wing.
15. Pump up jack until main wheel is lifted off the ground.
16. Retract landing gear. NEVER TAKE WINGS OFF GLIDER WHILE WHEEL IS STILL DOWN. If wheel is down and jack accidentally lowers after wings are removed, fuselage may roll to side, hit ground and cause major damage.
17. Remove tape from wing joints, wingtip joints, horizontal stabilizer joint and TE probe joint. Remove any tape over wingtip retaining pins, and over pin holes near wing root trailing edge.
18. Remove battery and all other objects from luggage shelf.
19. Check cockpit contents.
20. Lock spoilers shut.

#### **B) Horizontal Stabilizer**

1. Remove total energy probe and stow safely in cockpit.
2. Operate the trim release lever and push the control stick forward, then release the lever to engage the trim (don't operate the trim control knob, the trim should not be pushed to the most nose down position).

3. Insert threaded tool into the securing plate (near the top of the left surface of the fin). Pull out the securing plate with the tool, move it downwards to engage in the rigging position.



4. Push horizontal stabilizer forward to disengage internal mounting pins -- it will move about an inch.
5. Lift horizontal stabilizer up off of vertical fin, being careful to disengage end of the elevator control rod from "funnel" attached to elevator. Carry stabilizer with one person at each end, and place in mounting cradle in roof of trailer. Close and latch rear cradle arm.
6. Use the tool to pull the securing plate up and then let it snap back into place. The securing plate must be flush with the surface of the fin. Unthread tool to remove.

## D) Wings

1. Remove both wingtips: Use small tool to press down the locking pin in top of wing surface in order to disengage wingtip, then gently pull wingtip out. **DO NOT USE WINGLET AS A LEVER FOR PULLING OUT THE WINGTIP.** Store 20-meter wingtips inside trailer roof at back end -- right wingtip goes on left side of trailer and left wingtip on right side. Leading edge of wingtip faces down into padded tray; need to pull tray edge out a little to get wingtip spar inside. Winglet goes into padded hook at rear of trailer roof.



Swiveling padded arm comes down over wingtip with end of arm in padded tray to lock wingtip in place. Store 18-meter wingtips at front of trailer; secure with bungee cords.



2. Install aileron locks on both wings.
3. Make sure there are no objects to trip over in path of wings (don't leave tail dolly next to tail).
4. At trailing edge of **left** wing root, insert threaded tool into hole in top wing surface and screw into small locating pin. As you screw the tool in, it will push the spring-loaded retaining wedge out of the way. Before pulling out tool and small locating pin, back tool off 1/8 turn so it will be easier to remove pin from tool.
5. Open rear canopy.
6. Make sure both wingtips are fully supported at all times during and after removal of main spar pins -- if wingtips are allowed to drop while wings are being removed, damage to fuselage may occur.
7. Have assistants lift on wing ends as needed to relieve pressure on spar pins, so that main pins may be unlatched and pulled out of pin holes. Note that wire handle on front of each spar pin will need to be unclipped and then unscrewed before spar pin will pull out. Clean spar pins and store in pouch.
8. Close rear canopy.
9. With one person on outer end of wing and one at leading edge of wing root, pull left wing out of fuselage. Person at wing root should support spar on his thigh.



Walk around to align wing with trailer, being careful not to hit wing surface on steel pins protruding from fuselage. Rotate wing to vertical orientation, and place spar on dolly with inner spar pin hole located on pin that protrudes from top of spar dolly.

10. Roll wing into trailer, and lift up on end of wing so that spar clears under mounting bracket at front of trailer. Lower leading edge of wing into pad on floor of trailer. When wing is fully inserted end of wing should be just inside back end of trailer.
11. Repeat step 4 and steps 7 through 9 for the **right** wing.
12. Make sure aileron locks are in place on both wings. Use wing tape to secure aileron locks in place so they cannot vibrate off in transit. Put red felt corner pads over ends of wings.

## **E) Fuselage**

1. Connect retaining strap from fuselage dolly through wing spar holes in fuselage.
2. Pull out additional ramp extension for tailwheel channel (stored on left rear floor of trailer), and place on end of fuselage ramp. Remove locking clip from side rail of ramp so it doesn't block wheel of fuselage dolly.
3. Check documents, T/E probe, seat cushion, parachute, anything else being stored in cockpit.
4. Close and lock canopies for transport.
5. Make sure tail is vertical. Walk fuselage up and into trailer, continuing forward until tailwheel drops into recess in trailer floor.
6. Belt the tail boom down onto the trailer.

7. Remove tailwheel ramp extension from end of fuselage dolly ramp, and store inside left rear of trailer (note how front end fits under bracket). Unlatch middle rail of ramp and swing out to side of ramp. Lower hydraulic jack. Lift dolly ramp and slide into trailer.
8. Remove trailer corner protectors and stow inside trailer.
9. Close and latch trailer tailgate. Note how knobs on inside of tailgate fit into holes in ends of wings, holding wings in place for transport. Currently (June 2009) they leave too much slack, allowing wings to bounce up and down -- use rags to pad holes in ends of wings to get tighter fit and hold wings down securely.
10. Close and latch trailer lid.
11. Store jack handle in front of trailer.

#### **F) Trailer Towing**

1. Make sure trailer jacks are retracted all the way before moving trailer.
2. After attaching trailer to tow vehicle, completely remove wind-up wheel at front of trailer, and store in tow vehicle. If left installed on trailer, these wind-up wheels have a tendency to vibrate loose and scrape on road.